RUST GEOTECH INC.

Spectral Gamma-Ray Borehole
Log Data Report

Borehole # 52-01-01

Log Event A

Borehole Information

Farm : TY

N-Coord : 42,649

Water Level, ft :

Tank : TY-101

W-Coord : 75,836

Date Drilled : 12/31/1971

Site Number : 299-W10-88

TOC Elevation : 671.21

Casing Record

Type : Steel-welded

Top Depth, ft. : 0

Thickness : 0.280

Bottom Depth, ft. : 100

ID, in. : 6

Borehole Notes:
According to the driller's records, this borehole was not perforated or grouted. The casing thickness is presumed to be 0.280 in., on the basis of published thickness for schedule-40, 6-in. steel tubing. The top of the casing, which is the zero reference for the SGLS, is approximately 0.5 ft below the tank farm grade.

Equipment Information

Logging System : 1

Calibration Date : 04/1996

Detector Type : HPGe

Calibration Reference : GJPO-HAN-5

Detector Efficiency: 35.0 %

Logging Procedure : P-GJPO-1783

Log Run Information

Log Run Number : 1

Start Depth, ft.: 0.0

Finish Depth, ft. : 13.5

Log Run Date : 5/13/1996

Counting Time, sec.: 100

MSA Interval, ft. : 0.5

Logging Engineer: Kim Benham

L/R : L   **Shield :** N

Log Speed, ft/min.: n/a

Log Run Number : 2

Start Depth, ft.: 99.0

Finish Depth, ft. : 12.5

Log Run Date : 5/14/1996

Counting Time, sec.: 100

MSA Interval, ft. : 0.5

Logging Engineer: Kim Benham

L/R : L   **Shield :** N

Log Speed, ft/min.: n/a

Log Event A

Borehole # 52-01-01

Analysis Information

Analyst : S.D. Barry

Data Processing Reference :   P-GJPO-1787   Analysis Date :   1/16/1997

Analysis Notes :

This borehole was logged in two log runs. The pre- and post-survey field verification spectra met the acceptance criteria established for the peak shape and detector efficiency, confirming that the SGLS was operating within specifications. The energy calibration and peak-shape calibration from these spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

The only man-made radionuclide detected in this borehole was Cs-137. Only a relatively small amount of Cs-137 contamination was measured in this borehole. Cs-137 contamination was measured intermittently in the top 3.5 ft of the borehole and at the bottom of the borehole. The maximum Cs-137 concentration was 0.35 pCi/g at 99 ft (the total depth logged).

K-40 concentrations increase at about 45 ft and the K-40 log plot shows a region of decreased concentration values between 85 and 90 ft. The Th-232 concentration increases at about 92 ft.

The change in the U-238 concentration values at 13.5 ft is associated with the change in log runs. The change is probably due to radon venting up the borehole. The 609-keV spectral peak that is used to calculate the U-238 concentration is only accurate if the Bi-214 and U-238 are in secular equilibrium. Because radon gas is an intermediate member of the U-238 decay chain, the equilibrium condition will be disturbed along with changes in the weather conditions in the vicinity of the borehole, and the concentration of the Rn-222 in the borehole does not necessarily remain constant between log runs.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank TY-101.

Log Plot Notes:

Separate log plots show the man-made (Cs-137) and the naturally occurring radionuclides (KUT). The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.